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INFORMATION REPORT

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SUBJECT NII 160 Development Laboratory and Plant for Electronic Tubes at Fryazino

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1. The development laboratory and production plant for receiver tubes in Moscow/Fryazino (55-58N,38-04E) was designated Institute 160 and was known as Radio-lampa by local residents. It was subordinated to the Ministry of Communications Equipment Industry. From Moscow the institute could be reached by rail via Ivanteyevka (55-58N,37-56E) and Bolshevo. In 1948 the single-track railroad line, Ivanteyevka - Fryazino, was electrified and a passenger railroad station was being constructed south of the institute.[1]

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Plant History

2. Institute 160 was set up after the war in buildings which were constructed before the war for a wire drawing mill. The first equipment for the institute arrived from a plant in Novosibirsk which, according to a Soviet statement, was evacuated there during the war. Many installations were marked Svetlana.[2] The population of Fryazino grew with the development of the institute. There were 800 to 1,000 children of school age in Fryazino, which originally was to be named Radiogorsk.

3. When Dr. Steimel's group arrived in Fryazino, another group of 25 Germans was already there. This other group came from the Fernseh A.G. (Television Inc.), which was evacuated to Tannwald, Czechoslovakia, during the war. Twenty-one members of this group were transferred to Leningrad in 1948. A total of 400 to 500 Germans, including dependents, lived in a section of the block just south of the institute and in the Suvokhov Sanatorium about three kilometers east of Fryazino.

Organizational Setup

4. For a sketch of the plant layout see Attachment No 3. During the period reported on, two new buildings were constructed, one two-story building for the magnetron department which was completed in 1950 and one for the computing department. 25X1 [redacted] the tube plant very seldom and remembered only one large assembly shop, 60 to 80 meters x 30 to 40 meters, where women were working at long lines of assembly tables. The laboratories were equipped with many modern machines of American origin. The installations were supplemented by dismantled machinery from the Telefunken Plant in Liegnitz, from an evacuated Lorenz Plant, and from the Tungsram Plants in Budapest. [redacted] 25X1 believed that almost the entire installation of the Liegnitz Telefunken Plant was shipped to Fryazino. The institute equipment was about equal in quality and quantity to the ones of German development laboratories. A technical school designated Vakuum Tekhnikum was located in the Fryazino school building. There were 100 to 200 students being trained at this school, which was to be moved into the German quarters and into a new building in the area of the institute after the departure of the Germans.

5. The power supplied to the institute was not sufficient. On account of the overburdened power system, the load of 220 V dropped to 190 V. The German experts subsequently had to construct special voltage stabilizing devices. As the power supplied to the plant was too low, the power was switched off between 1700 and 2000 hours during the winter months. The municipal power net was also constantly overloaded.

Activities at the Institute

6. The German scientists arrived in 1946. In late 1947 Goltsov (fnu) was assigned as a director of the institute. He increased its capacity rapidly, so that by 1949 it was declared an Institute First Class and the salaries of the employees were raised. The waste-to-finished-products ratio was gradually reduced from 85 percent to 30 percent by 1950.

7. In the beginning the Soviets had no plans for the employment of the German experts, who were, therefore, allowed to set up their own work program for 1946 and 1947. The plans were generally accepted by the Soviets. After Goltsov took over, the German engineers were informed monthly of their work program. The group as a whole was no longer charged with research projects, but its scientists were individually assigned to various laboratories where they were given strictly outlined work orders in their special fields. Beginning in 1949 German engineers were withdrawn from the development, and in 1950 they no longer knew anything about new projects and developments.

8. In 1947 Dr. Karl Steimel established a tube construction program based on American principles for the construction of tubes suitable for Soviet requirements. Like all similar projects, it was forwarded to the ministry in Moscow. While working in the tube test field, source got the impression that some of Dr. Steimel's suggestions were accepted. By the end of 1950 Dr. Steimel received permission to concentrate all of his efforts on his own scientific research program in the field of regulating devices. Since that time, he has not been called to contribute at the institute.

Magnetron Tubes

9. The department for the production of magnetron and transmitter tubes comprised two laboratories, one under the direction of Zuzmanovskiy and the other under Feodosiyev. Admittance was by special identity card only. American and Japanese magnetron tubes were duplicated and manufactured in the laboratory. It was learned from conversations with Soviets and the department for radio physics that impulse (pulsed) magnetron tubes for the three-centimeter and ten-centimeter bands have been produced in quantity since 1948.

10. In March 1950 the institute received those parts of three radar sets which are required for the operation of magnetron tubes. These parts included modulators, permanent magnets, and main connection units. Two of these sets were given to the magnetron department to test the magnetron tubes, and the other set was given to the theoretical department for experiments with the frequency stabilization. Being an expert in [redacted] was consulted when the sets were first put into operation. [redacted] as duplications of the American SCR 584 type antiaircraft radar set. The designation plates were in Russian, and there were no type plates or any other indications as to the origin of these radar sets. The copy was so close to the originals that American connection diagrams could be used.

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11. The department for radio physics produced all computing instruments required by the institute, including those for the two types of magnetrons. Voltmeters for the three-and ten-centimeter waves were worked on in the laboratory under Dr. Werner Vogi (Fogy). Development activities at this laboratory were discontinued after Dr. Vogi was arrested in 1949. High-capacity impulse measuring devices for the testing of magnetron and other tubes at the institute were constructed in a special laboratory. Magnetron tubes with a wave length of less than three centimeters were being developed but not produced by the end of 1950.

12. The laboratory for transmitter tubes had four pumping stands in operation which [redacted] facilitated the production of eight tubes per day. There is no information available on the laboratory for gas-filled tubes.

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Klystron Tubes and Detectors

13. Research in the field of klystron tubes, possible only in connection with the development of oscillator circuits and instruments, was started in late 1947 or in early 1948. The American broad band receivers for the three-and ten-centimeter bands were used as models for the development. Dr. Hans Topper, Graduate Engineers Eitel Fritz Spiegel and Horst Gerlach, and technician Walter Ewald worked in the klystron and detector department on the development of receiver sets. Bolometers were constructed for measuring purposes. Engineer Willi Siems, an industrial engineer without exceptional qualifications in this special field, was charged with the technological problems arising from the construction of klystron tubes. The reassignment of Dr. Hans Rosenstein from the theoretical department to the calculation of cavity resonators indicated that the Soviets did not concentrate on copying American type devices but attempted a development of their own in this field. The klystron department frequently had to work overtime. [redacted] an effort was made to develop tubes suitable for a wave length below three centimeters.

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14. A new laboratory for the development and construction of detectors was installed in 1948. Dr. Emil Schloemilch, an expert from Gorkiy Karpovka, was called to the institute. The department constructed detectors for centimeter receivers similar to American Sylvania detectors. [redacted] did not know anything about activities in the field of germanium detectors. The rate of production at the department was roughly estimated at 100 to 200 units per day. By the end of 1950 the production was to be transferred from the institute to the plant. The completed detectors were sent to the klystron department to be tested with the receivers available there.

Television

15. Department 130, for the development of television tubes, was set up shortly after the arrival of Dr. Steimel and his scientists. Its equipment included dismantled machinery from the Fernseh AG in Berlin, instruments from the Oberspreewerk, and the archives of the Telefunken Plant. Laboratories 131 and 135 were completely installed during 1947. Zhutak (fnu), the Soviet chief of Department 130, sought the advice of Werner Kluge during the early period.

16. Television tubes were developed in Laboratory 131. An iconoscope was already developed by 1948 and has been produced since at a monthly rate of production of 25 units with a waste-to-finished-product ratio of 90 percent. The next project being worked on was a super-iconoscope which had been produced in quantity by the Fernseh AG in Berlin during the war. This super-iconoscope was redeveloped in every detail and made ready for production. The final study on the tube was completed in mid-1950. The inconoscope was given no type designation but merely a work number. The radio plant prepared for the production of these super-iconoscopes. The glass bulb had a diameter and a length of about 200 mm. The tube was provided with a standard photographic cathode, and only a few samples were constructed with infrared sensible cathodes. The laboratory was in contact with a group of German television engineers from the Siemens Plant in Arnstadt who worked in the Svetlana Plant in Leningrad under Dr. Alfred Schiller, a physicist, on the development of super-iconoscopes. Engineers from the Fryazino institute returning from a visit with the group in Leningrad stated that the super-iconoscope developed there was much smaller and was provided with an infrared cathode. Preliminary research for the construction of an American image orthicon, procured from the United States, was started in 1949. The model tube had a length of about 400 mm and a diameter of about 70 mm. According to the research plans, the project was started with the systematical clearing of all technological problems in 1950. An experimental tube which slightly deviated from the original model operated satisfactorily by the end of 1950, and pictures were shown in the testing installation. In 1951 it was planned to reduce the length of the tube to 200 to 250 mm and the diameter to 30 mm to 40 mm. The number of lines was to be reduced from 625 to 300 or 380.[3]

17. Oscillograph tubes and picture receiver tubes were developed in Laboratory 132. The development was based on British oscillograph tubes of the types ACR-1, ACR-2, ACR-10, and on models of the VCR series. By 1947 construction was possible. In 1948 the tubes were further developed to television tubes with screen diameters of seven inches, nine inches, and twelve inches. The developments reached the status of US developments, as indicated by magazine articles. The waste to finished products ratio during the period the models were produced amounted from 30 to 35 percent. In 1949, the plant started mass production of the small to medium series of such television and oscillograph tubes. It was estimated that a daily production quota of 50 television tubes would be possible. There were also projector tubes with a screen diameter of three and four inches for 30 kV developed at Laboratory 132 during 1949. These tubes were rarely improved and had not gone into production in 1950. The development of high-capacity oscillographs with a particularly high

recording speed was not finished by the end of 1950. The construction of five such units was planned.

18. US Blauschriftroehren (dark ray tubes) were reconstructed in Laboratory 133. Dr. Juergen Rottgardt, who had successfully redeveloped these US tubes during the war at the Oberspree Plant, was in charge of the project. The development was completed in 1949, with the tube having reached the status described in American technical publications of 1948. During 1950 the tubes were merely measured for theoretical purposes, and, although they were frequently demonstrated during inspections at the institute, the tube was not prepared for production during the time covered by this report. Dr. Rottgardt was not in charge of a new project.

19. Computing instruments and testing equipment required by the department for television tubes were manufactured in Laboratory 134.

20. Laboratory 135 developed illuminating agents (C/R tube phosphors). Requirements for such agents first arose in late 1946 when the construction of oscillograph tubes was started. Dr. of Physics Fritz Michels successfully tried to produce the required agents on the basis of formulas published in technical magazines. Equipment for the production of illuminating agents arrived in 1947 from the Siemens Plant in Arnstadt. Dr. Nikolaus Riehl, Dr. Henry Ortmann, and Dr. Tiede (fnu) were consulted by the institute for this production between late 1947 and September 1948. The experts arrived daily at about 1000 hours by car and left the plant at about 1600 hours. It is not known where they lived. In 1948 Grigoryev, the Soviet chief of Laboratory 135, returned from a visit to Germany and stated that a group of scientists from the plant for illuminating agents in Steinbach/Thuringia would arrive soon.[4] However, [redacted] this group under Dr. Kamm (fnu) had escaped to the West. A project by Dr. Kamm on the establishment of plants for the production of illuminating agents was among the records available at Laboratory 135. [redacted] this project was not carried out in the suggested way. Illuminating agents produced at the plant of NII 160 included zinc-cadmium sulfides and selenides of high qualities. Silicates, however, were not produced. The monthly production quota was about five kg, about two of which were used in the plant. About three kg were given to Plant No. 632 in Moscow. During the summer of 1948 Gugol, a Soviet expert for illuminating material, frequently visited NII 160. Gugol had allegedly developed very good illuminating agents at a Moscow institute. It was stated at a later date that this institute was closed.

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21. There were no Germans employed at Laboratory 136, the so-called secret department. In 1950 the laboratory was established by Astrin (fnu), chief of Laboratory 133. As a large amount of measuring equipment and other instruments were purchased by this laboratory, it was believed that large funds were available. Nothing could be learned about the activities of Laboratory 136. Possibly the graphicon, a special type of memory tube, was to be developed there. Astrin worked on a study of the graphicon created by Dr Rottgardt in 1949. After the establishment of Laboratory 136, there was nothing mentioned to Dr. Rottgardt about an eventual development of this tube during 1950.

22. Receiver tubes were tested in the measuring department, which was well equipped with 20 tube test stands, measuring bridges, voltmeters for tubes, and oscillographs. About 90 Soviet engineers and women were employed in this department. Personnel in the test field for the life time tests of tubes worked in accordance with American testing procedures. At a test field, tubes from NII 160 and from other plants were tested, and the Soviets stated that it was to test tubes produced in the entire USSR. A climatic test field was provided for tests at temperature between 60°C above zero to 50°C below zero with 0 to 100 percent of moisture. A special laboratory was established for the production and maintenance of all instruments at the measuring department. There were no instruments available for the testing of tubes under

high accelerations. Defective tubes were checked at a department for mechanical measurements which was equipped with microscopes. [redacted] remembered the following details of the Soviet tube development program: NII 160 manufactured the following listed US type glass bulb tubes: 6F5, 6G7, 6Sh7, 6A8, 6A10, 6K7, and 6L7. Metal tubes, such as 6A10 type tubes, were manufactured in the Svetlana Plant in Leningrad, which also produced Soviet 12Sh1 type tubes similar to RV12P2000 tubes. Tubes designated 6Q10 arrived from an unknown plant to be tested at the institute. In the line of small tubes, the most used types of midget tubes were manufactured at Institute 160. 6AG5 tubes were mass produced in 1947, and the production of 6AK5 tubes was started in 1950. Since 1948 the plant has also been producing large quantities of DID duodiodes, which had a bulb diameter of about eight mm, a length of 15 to 20 mm, and pinched bases five or six mm long. Source never observed Soviet tubes of the old series which were designated with letters such as WO, UT, UK, UB, SO, and SB. Tubes of the G series produced included the G411 and G412.[5] 25X1

Low-Power Transmitter Tubes

23. Low-power transmitter tubes of the types G807, G837, G1625, and 2P29 were developed in the department for receiver tubes and produced in the plant. After two years of research the tubes finally could be produced, possibly by early 1949. Transmitter tubes with a power of more than 100 W were never tested at the test field for receiver tubes.

Electrometer Tubes

24. Smaller quantities of electrometer tubes were continuously produced since 1947 for the measuring of currents between 10 and 12 A. Because of a study published in a British magazine, source had to find out whether standard tubes could be used as electrometer tubes. Experiments revealed that individual types, such as the 2P29, were provided with a very well insulated grid.

Main Rectifiers

25. The following main rectifiers were produced at Plant 160: 5U4, 5Z4, and 6Z5. 6X5 tubes, delivered from an unknown plant, failed, due to defective cathodes, when first subjected to life endurance tests.

Miscellaneous

26. Duplications of German noise diodes, manufactured at the Svetlana Plant, were tested at the institute. The construction of ceramic tubes was not observed.

Technological and Supply Problems

27. Barium oxide-cathodes for receiver tubes were often unevenly sprayed and unclean, a fact which caused failures in the production. A Soviet group was charged with the development of cathodes for impulse (pulse) tubes since 1946. Dr. of Chemistry Hans (Kurt?) Richter, who was frequently consulted as an expert for technological problems connected with development, stated that the activities of this group were considerably accelerated during 1949 and 1950. In the beginning the production of grids met with difficulties in regard to the gilding of the completed grids. These difficulties were eliminated by galvanizing the wires before winding the grids. Until the appearance of Soviet material in 1949, most of the material requirements were filled from captured German stocks. The supply of nickel was a bottleneck, as the metal was not pure and contained too much zinc.

Department OKBM

28. Special machines for the production of tubes were developed and constructed at the OKBM department. Palme (fnu), a very skilled technician, was working in the construction office. According to Soviet statements, OKBM was a central development workshop for the entire USSR.

Glass Works

29. On a German suggestion a glass plant was established at the institute to cover the requirements of glass bulbs. Gerhard Riedel and two assistants from the glass works in Zaprudnya, located north of Moscow, were called to Fryazino to help on the establishment of the glass plant. Riedel stated that this glass plant is a very small installation.

Library

30. There was a large and very well organized library available at the institute. The library, about 12 x 15 meters, was filled with book shelves and equipped with an excellent index. Books not available could easily be procured from Moscow. In addition to Soviet technical literature, there were many German and American technical books, including directives for the construction of tubes, published by the RCA, dating up to 1945. These are well known as the so-called blue books. These blue books were given to the USSR as a part of the lend-lease program. [redacted] a 25-volume work on wartime development in the United States which was published in 1948 and was translated into Russian. All important foreign technical magazines were usually available at the institute two months after they had been published. The equivalent Soviet literature was mot available. Especially important studies in foreign magazines which were translated into Russian included a study by Schneider on radar, published in Proceedings of the IRE, 1946 edition, pages 525 to 578.

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Personnel Working at the Institute

31. For a tabulation of the leading personnel at NII 160, see Attachment No 5. Most of the Soviet engineers working in the scientific field were 40 to 46 years of age and had come to Fryazino after World War II. Many engineers proudly stated that they belonged to the Leningrad School. In early 1947 there were 193 German experts at the institute. In December 1950 there were 187 Germans at the institute, about 100 of whom were released by the end of December 1950. In 1950 the total work force of the plant was estimated by source I to be 2,500 to 3,000, and by source II to be 4,000, including 70 percent women. Ever since 1946 the work force was constantly increased, so that it became difficult to provide housing for all laborers. [redacted] estimated that there were work places for twice as many personnel at the plant. Work was done in one eight-hour shift, including Sundays. Only some workshops, such as the glass plant and the boiler shop, worked three shifts. 25X1

32. The laboratory departments were set up similar to Department 130, which comprised about one-sixth of the plant area and employed about 100 Soviets in 1950. [redacted] estimated that a total of about 600 Soviets worked in the development laboratories.

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33. Many students from technical high schools in Moscow received their practical training in the plant and, for a short period, in the laboratories. Once a year students from the Vakuum Tekhnikum came to the plant for practical training. Three to five engineers and three to five technicians from institutes of technology worked at Department 130. Every year about 75 percent of these individuals were women.

Various Tube Plants and Institutes

34. In 1946 Dr. Steimel suggested that one expert for radar equipment be attached to a radar institute in Moscow which allegedly was operated by Admiral Aksel Ivanovich Berg, a former Tsarist officer. However, this suggestion was not approved by the ministry in Moscow.

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35. [redacted] assigned to Plant No 632 in Moscow to advise three capable Soviet engineers how to get the production of television tubes and oscillograph tubes started. Plant No 632 was located on Elektrozavodskaya Ulitsa in the eastern part of Moscow. The plant had previously produced light bulbs. In 1947 it was reequipped with dismantled machinery for the production of radio picture tubes from the former Telefunken Plant in Liegnitz and was converted for the production of small oscillograph tubes. During source's assignment, the plant produced tubes of the LB 0 type which were used by the Luftwaffe for radar equipment. The monthly production quota ranged between 1,000 and 5,000 units. There was serious lack of skilled workers at the plant. Source learned from a female Soviet chemist that illuminating agents, still being supplied by NII 160, were to be produced in the plant. Silicate illuminating agents were already being produced there.

36. A decimeter set for 12 transmission channels was developed at NII 20 in Moscow. Dr. Karl Steimel, Dr. Werner Vogi, and Graduate Engineer Wilhelm Grimm from NII 160 were consulted by the Moscow institute in 1947. It was the belief of these experts that the project was successfully completed after a short period. [redacted] German decimeter sets of the Michael type in various Moscow barracks. Such a set was also used at NII 160 to maintain telephone communication with Moscow until the wire connection was completed.

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37. It was known at NII 160 that Dr. Engineer Werner Buschbeck and ten assistants were transferred from Monino to Moscow in 1950, where they lived in isolation.

38. Various American types of receiver tubes, manufactured at a tube plant in Novosibirsk, were tested in Fryazino. Dr. Hans (Kurt?) Richter, who once was sent to Novosibirsk to eliminate production failures, stated that he had worked in a laboratory similar to the ones in Fryazino, and that he did not enter the production shops. Colonel Katzmann (fnu), whom the Moscow ministry had sent to visit the Oberspreewerk in 1945 and 1946, was said to be director of this plant.

39. Zuzmanovskiy and other Soviets frequently spoke about a tube plant in Tashkent; however, tubes produced by this plant were never seen.[6]

40. Seebode (fnu) frequently visited a plant located at the Moscow-Leningrad railroad line on the Volga River. He stated that this plant was still far behind the status of the Fryazino Institute.

41. A group of engineers from the Siemens Plant in Arnstadt and from the Fernseh AG worked in Leningrad in the Svetlana Plant. German chief of the group was Dr. Alfred Schiller. His staff included Dr. Engineer Werner Guenther, Chief Engineer Johann Guenther, Dr. Ernst Zschau, Dr. Engineer Werner Hoffmann, Graduate Engineer Herbert Matzke, and Legler. Graduate Engineer Gerhard Zimmer from the former Leuchtstoff Plant was also a member of this group.

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[redacted] Comments:

1. See Attachment No 1 for a sketch of the railroad connection Moscow-Fryazino and Attachment No 2 for a location sketch of NII 160.

2. In August 1941 the Leningrad Radio Kombinat No. 208 Komintern was partially evacuated to Novosibirsk, and the Svetlana Radio Tube Factory No. 211 was transferred to the Ural Mountains during 1941. The first equipment for the radio plant in Fryazino was probably taken from the stocks of these two plants.

3. This low number of lines indicated that the image orthicon was developed for military purposes rather than for television sets.

4. The Steinbach plant was subordinated to the Soviet-owned Siemens Plant in Arnstadt.

5. The type designation letters were transliterated from Russian.

6. A tube plant in Tashkent has been confirmed by shipping tickets which also gave data for 2 K 2 M tubes.

Attachments:

1. Railroad connections in the Fryazino area.
2. Location sketch of NII 160.
3. Layout sketch of NII 160.
4. Organizational structure of NII 160.
5. List of personalities at NII 160.

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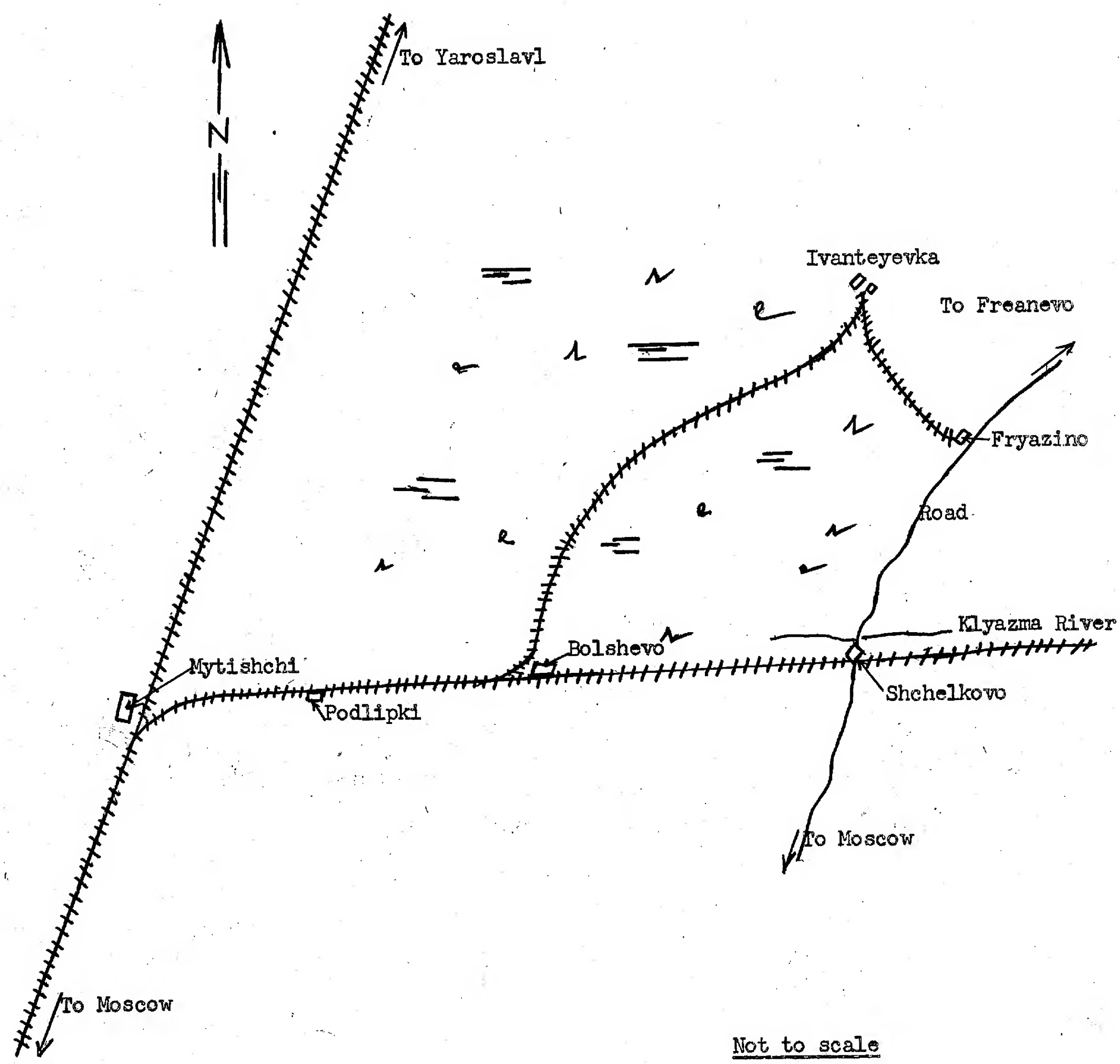
[redacted]
Attachment 1

Location Sketch of Fryazino



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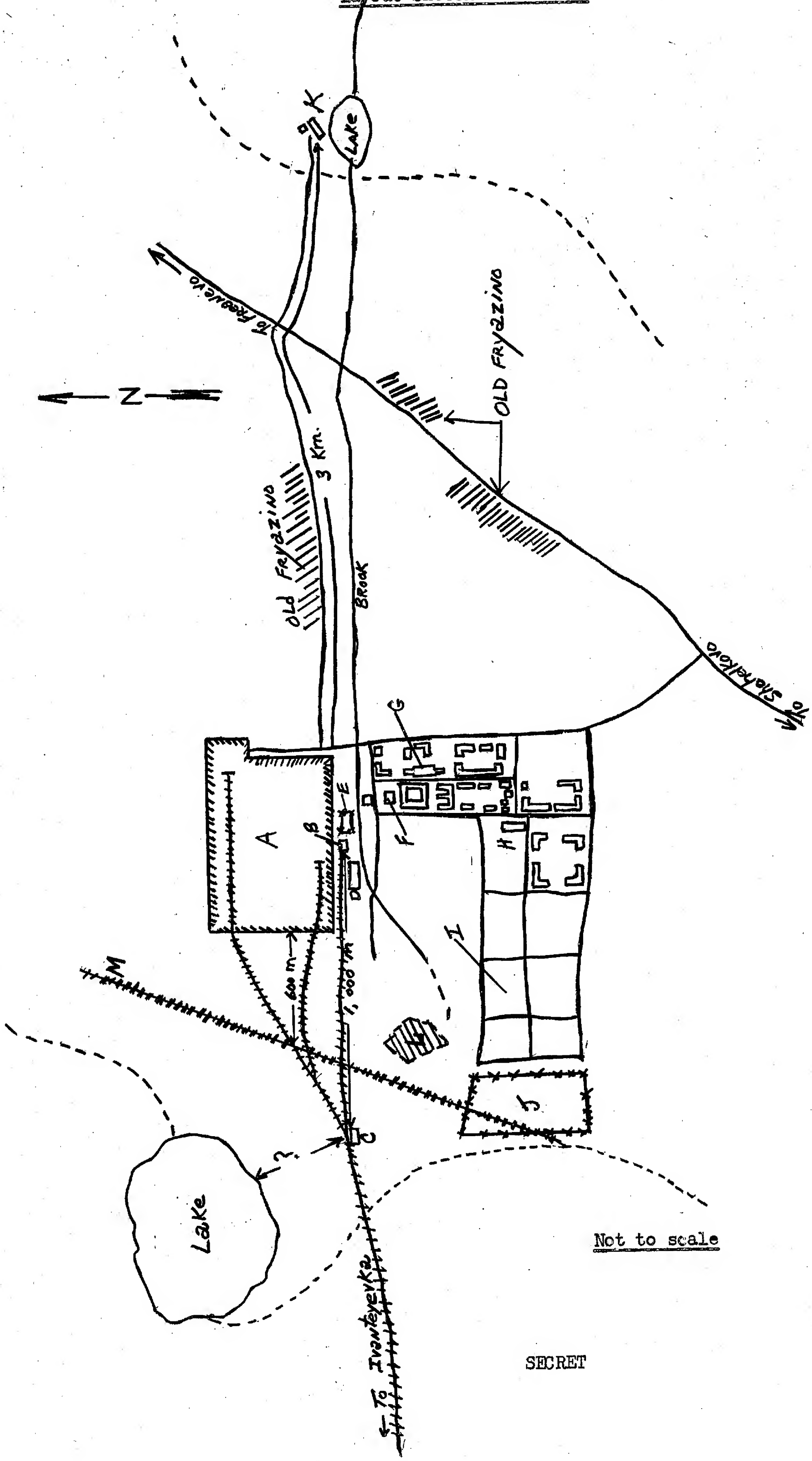
Attachment 2

Layout Sketch of NII-160



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Legend for Attachment No. 2

A. NII-160, about 800 x 1,000 meters.

B. New passenger railroad station.

C. Freight station with gravel mill.

D. Sawmill.

E. Soviet prison camp with about 100 inmates.

F. Hospital

G. Culture building, seven stories.

H. School

I. Settlement with wooden houses.

J. Military motor pool.

K. Suvokhov sanatorium.

L. Temporary settlement.

M. High-tension power line.

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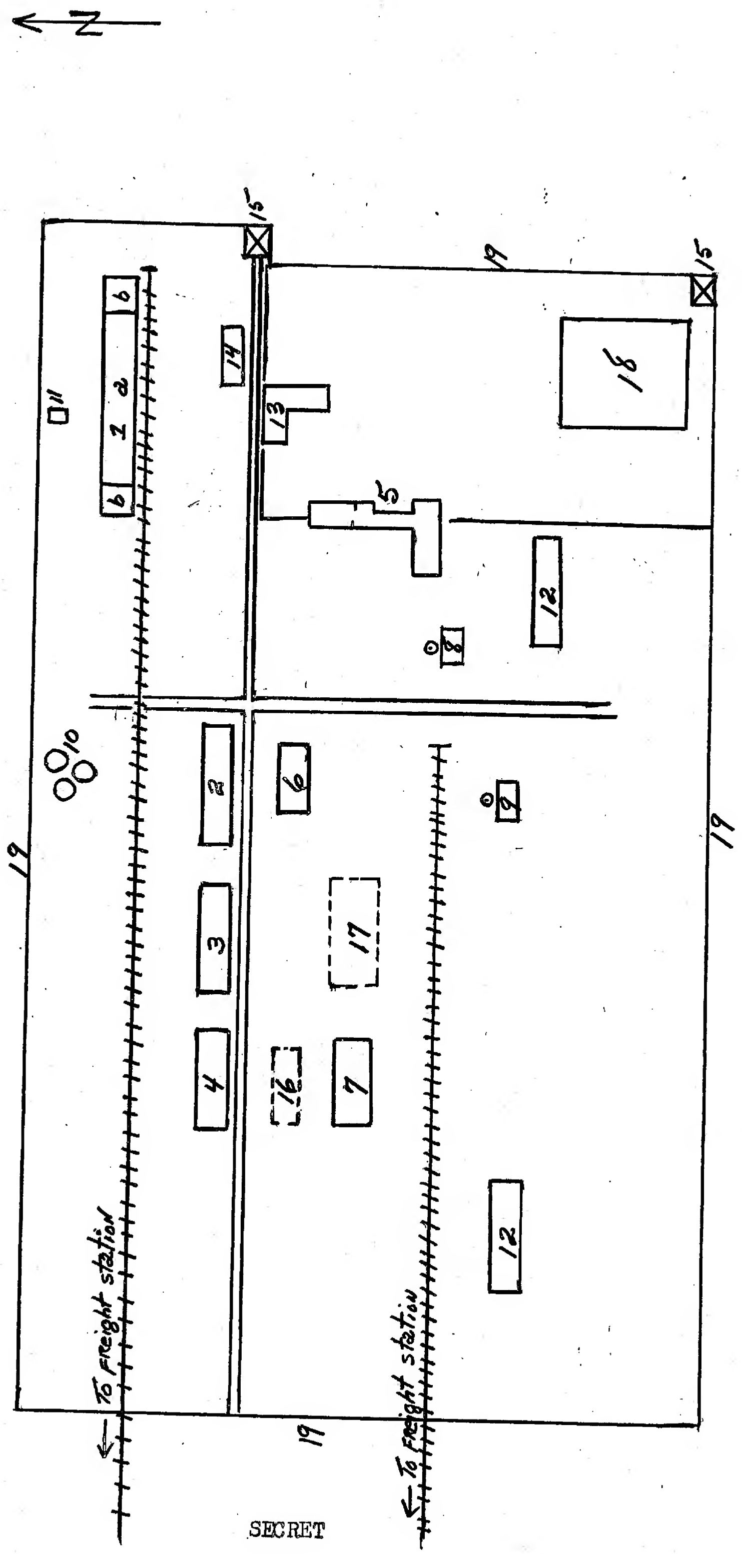
[redacted]
Attachment 3

Plant Layout of NII-160 in Fryazino



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Legend

1. Zavod; the dimensions were given as 250 x 50 m and as 20 to 25 x 200 m by Source II.

   a. Three-story section.

   b. Four-story section.

2. Institute building, about 25 x 100 m, three-story building..

3. Two-story building housing the magnetron department.

4. Two-story new building housing the measuring department.

5. Old plant building housing sections of the magnetron department, the transmitter tube assembly shop with pumping stands, the school, and the personnel office.

6. Glass Plant.

7. OKBM.

8. Boiler house.

9. Small gas plant with one smoke stack at the northern side.

10. Rubber containers for hydrogen.

11. Small building housing the hydrogen sulphide plant.

12. Storage shed.

13. Canteen.

14. School for employees of the institute.

15. Guard house.

16. Foundations for new plant building; some of them were old; construction work had been discontinued for a long time.

17. Foundations allegedly for a new building of the institute. Some of the foundations were old, and construction work went slowly.

18. Motor pool.

19. Concrete wall.

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[redacted]

Attachment 4

Organizational Set Up of NII 160 in Moscow/Fryazino

General Management of NII 160

I. NII 160 (Development of tubes)

1. Theoretical Department

2. Department for the development of magnetron and transmitter tubes

   a. Laboratory for the development of magnetron tubes

   b. Laboratory for the development of transmitter tubes and gas-filled tubes

   c. Laboratory constructing impulse instruments

3. Klystron and detector department

   a. Laboratory for the construction of klystron sets (instruments)

   b. Laboratory for the construction of klystron tubes

   c. Laboratory for the construction of detectors

4. Department for television tubes

   a. Laboratory for television tubes

   b. Laboratory for oscillographs and television tubes

   c. Laboratory for Blauschriftroehren

   d. Laboratory for measuring and testing equipment

   e. Laboratory for illuminating agents

   f. So-called secret department

5. Department for the development of receiver tubes

   a. Laboratory for electrometer tubes

6. Chemical department

7. Department for radio physics

   a. General construction of instruments

   b. Laboratory for centimeter devices

8. Measuring department

   a. Life endurance testing field

   b. Probe testing field

   c. Laboratory for mechanical tests and climatic examinations

9. Department for mechanical measuring

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10. OKBM

a. Construction office

b. Workshop of the institute

c. Library

II. Zavod for the production of tubes, with a construction office

III. Glass plant, production of bulbs

IV. Vakuum tekhnikum (school)

Tabulation of Personnel at NII 160 in Moscow/Fryazino

General Management:

Plant directors: Zakharov (fnu) until 1947. He was then transferred to the Ministry of Communications Equipment Industry in Moscow.

Zuzmanovskiy (fnu) temporarily during 1947. He was chief of the first laboratory of the magnetron department.

Goltsov (fnu) from 1947 until November 1950. He had visited the United States.

Chief engineer: Sorokin (fnu)

I. Institute

1. Theoretical Department

Soviet chief: Lukoshkov (fnu)

German staff: Dr. Karl Steimel

Dr. Gerhard Dobbrak(or Dobrack)*

Dr. Gerhard (fnu), an expert for centimeter equipment

Dr. Gerhard Hagen, a mathematician *

Dr. Hans Rosenstein, who calculated oscillating circuits for klystrons

2. Department for Magnetron and Transmitter Tubes

a. Laboratory for the development of magnetron tubes

Soviet chief: Zuzmanovskiy (fnu), a qualified scientist who had studied at the Berlin-Charlottenburg Institute of Technology and had also visited the USA

German staff: Engineer Heinz (or Karl) Gromadies

Mechanic Helmuth Stolle

During the war both experts worked in the Berlin Tube Plant on the development of ceramic tubes. They were transferred to another department in 1950.

b. Laboratory for the development of transmitter tubes and gas-filled tubes

Soviet chief: Feodosiyev (fnu)

1. Laboratory for the development of transmitter tubes

Soviet chief: Mrs. Krakau (fnu)

German personnel: Gerhard Haucke

Engineer Otto Sperling*

2. Laboratory for gas-filled tubes

Soviet chief: Mrs. Vogelsohn (fnu)

German personnel: No details available

c. Laboratory for the construction of impulse instruments

Soviet chief: Stroganov (fnu)

German personnel: Mechanics

3. Klystron and Detector Department

a. Laboratory for the construction of klystron instruments

Soviet chief: Fishbein (fnu)

German staff: Dr. Hans Tropper

Graduate Engineer Eitel Spiegel

Graduate Engineer Horst Gerlach

Engineer Walter Ewald

b. Laboratory for the construction of klystron tubes

Soviet chief: Mishkin (fnu)

German staff: Engineer Willi Siems

c. Laboratory for the construction of detectors

Soviet chief: Krasilov (fnu) He was previously chief of the measuring department.

German staff: Dr. Emil Schloemilch, a detector expert

Engineer Hellwig (fnu)

4. Department 130, Television Tubes

Soviet chief: Astrin (fnu) until early 1949. He was about 35 years of age and had visited England and the USA. He became chief of Department 133.

Zhutak (fnu) since 1949. He came from the Ministry of Communications Equipment Industry in Moscow.

Three Soviet clerks

a. Laboratory 131 for television tubes

Soviet chief: Artemyev (fnu) (since 1950)

Soviet engineers: Petrenko (fnu)

Gerus (fnu), an outstanding engineer

Six additional Soviet engineers

Four technicians

Three unskilled female laborers

German staff: Graduate Engineer Hass (fnu), who came from the Fernseh AG and developed iconoscopes

Graduate Engineer Walter Dirbach*

b. Laboratory 132 for oscillograph and television tubes

Soviet chief: Tarasov (fnu)

Two Soviet technicians

Three Soviet engineers

German staff: Dr. Physics Helmut Klang

Graduate Engineer Werner Fiedler*

Helmit Koewing, a technologist and practical engineer

c. Laboratory 133 for <u>Blauschriftroehren</u>

Soviet chief: Astrin (fnu) between early 1949 and early 1950. He then was assigned to Laboratory 136.

Three Soviet engineers

Three unskilled laborers (women)

About ten persons were transferred to Laboratory 136 in early 1950.

German staff: Dr. Juergen Rottgardt

Dr. Werner Kluge

d. Laboratory 134 for the construction of measuring and testing equipment for television tubes.

Soviet chief: Lebedev (fnu)

Seven Soviet engineers

Three technicians

Four female mechanics

German staff: Baehr (fnu), expert for television switching systems

Rohwetter (fnu), television sets

Engineer Walter Gutzke*

Additional Germans

e. Laboratory 135 for illuminating agents

Soviet chief: Grigoryev(fnu), who was simultaneously chief of the production department for illuminating agents. He was also chief of the chemical department to which Laboratory 135 was subordinate . Between 1947 and the spring of 1948 he visited the plant for illuminating agents in Steinbach.

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Three Soviet engineers

Three technicians

Two unskilled female laborers

German staff: Dr. Physics Fritz Michels*

Ilse Mueller, a female chemist

f. Laboratory 136, the so-called secret department, established in 1950.

Soviet chief: Astrin (fnu)

One Navy captain

One Army captain

Three capable civilian engineers

Three young engineers

Two or three technicians and five additional Soviets who previously had worked in Department 133.

g. Workshop for the production of television tubes (the other production shops were set up in a similar way)

1. Chemical section: Two Soviet engineers

   Five Soviet women

2. Pumping stand: Two Soviet engineers

   Eight Soviet women

   Max Richter, a German glass blower

3. Glass plant: Three Soviet engineers

   Six Soviet women

   Senf (fnu) and another German glass blower

4. Tube assembly: One Soviet foreman

   Four Soviet laborers

   Four German laborers*

   One German tube mechanic

5. Fitting shop: One Soviet foreman

   Four Soviet laborers

5. <u>Development Department for Receiver Tubes</u>

Soviet chief: Ratenberg (fnu)

German personnel: Prof. Dr. Gerhard Mie, a tube physicist

Engineer Heinrich Krueger, who reconstructed American receiver tubes and small transmitter tubes

a. Laboratory for electrometer tubes

Soviet chief: Name was not remembered

(no German personnel worked in this section)

6. Chemical Department

Soviet chief: Medlin or Gleb Aleksandrovich Metlin

German staff: Dr. Hans (or Kurt) Richter, who worked on technological problems connected with the production and development.

Dr. Ernst Schaaf, who developed cathodes from US models

Albert Grove, who worked on material tests and analysis

7. Department for Radio Physics

Soviet chief: Strutinskiy (fnu)

a. Section for the general construction of instruments

Soviet chief: Name was not remembered

German staff: Graduate Engineer Herbert Junker*

Engineer Albert Turlay or Thurley*

Engineer Alois Fleischer*

Graduate Engineer Wilhelm Grimm*

Engineer Wilhelm Wiener, who was arrested in 1947

b. Laboratory for centimeter devices

Soviet chief: Name was not remembered

German staff: Dr. Werner Vogi or Fogy, who was arrested in 1949 because he had tried to establish contact with the Austrian Embassy.

Engineer Ernst von Hagen

Technician Munthe (fnu)

8. Measuring Department

Soviet chief: Seebode (fnu), a German from the Baltic States, who was transferred to NII 160 from the Svetlana Plant in Leningrad

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a. Life endurance testing field

Soviet chief: Name was not remembered

(no German personnel)

b. Probe testing field

c. Laboratory for mechanical tests and climatic examinations

Soviet chief: Avners (fnu)

German staff: Engineer Erwin Schulze

Engineer Hans Siems
Several mechanics

d. Laboratory

Soviet chief: unknown

German staff: Engineer Friedrich Zeegenhagen

Interpreter Johannes Elsner

9. Department for Mechanical Measuring

No Germans worked here.

10. OKBM

Soviet chief: unknown

a. Construction office:

German personnel: Engineer Guenther Taubert*

John (fnu)*

Palme (fnu)

Seven additional Germans

b. Workshop of the Institute:

Soviet chief: unknown

German personnel: Engineer Otto Schmidt*

Schneider (fnu)*

c. Library

II. Tube Production Plant

Chief engineer: Engineer Paul Rothenburg

Several mechanics

Note: The construction office of the plant was established in the building of the Institute.

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German personnel: Hans Zander

Albert Bohne

Erwin Thuermann

Wilhelm Malchow

Herbert Reinecke

Herbert Reschke

Fischer (fnu)*

Engineer Karl Treiber*

Engineer Otto Schoenfelder*

Engineer Paul Sprotte*

Franz Froemmel of Frommel*

Wende (fnu)*

III. Glass Plant

German personnel: Gerhard Riedel,* a glass industrialist who established the glass plant in 1947.

Graduate Engineer Ludwig Huebner

* Germans who had been released as of the date of information of this report.